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Secured Wireless Handsets

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BACKGROUND

The present invention relates to systems and methods to secure wireless handsets especially in vehicles.

With rapid declining cost, increasing functions, better performance, and portability, sales of wireless handsets such as the cell phones are widespread. Because of these advantages, law enforcement vehicles, delivery trucks, taxis, and company vehicles are often equipped with wireless handsets. However, the cradles that hold and supply power to the wireless handsets do not prevent easy removal and may encourage the driver to drive with one hand while talking or even no hands while dialing a phone number. Further, vibrations and shaking during transportation may cause the unsecured wireless handsets to fall out of the cradle.

It would be desirable if wireless handsets could be inexpensively secured in certain environments to prevent unauthorized removal or use and to encourage hands free communication on the wireless handset while driving a vehicle.

SUMMARY OF THE INVENTION

The present invention relates to systems and methods for securing a wireless handset to prevent easy removal of the wireless handset and encourage hands free communication. In an embodiment, the secured wireless handset includes a first attachment using a T-nut assembly to secure the wireless handset to the cradle. A second attachment secures the cradle to a designated communication site. In another embodiment, the first attachment includes a security block for obstructing a release mechanism of a latch on the cradle to secure the wireless handset to the cradle. Although primarily discussed in the context of vehicles, the secured wireless handset is applicable to any designated communication site where wireless handset loss or removal is a concern.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a wireless handset secured to a vehicle dashboard.

Figure 2A is a perspective view of a wireless handset in a cradle.

Figure 2B is a perspective view of the back of the cradle.

Figure 2C is an exploded view of the wireless handset, a cradle, and a threaded bolt.

Figure 2D is an exploded view of the back of the cradle and wireless handset and the threaded bolt.

Figure 3A is a perspective view showing a T-nut protruding through the battery cover of the wireless handset.

Figure 3B shows the wireless handset with the battery cover removed to show the battery and the T-nut.

Figure 3C is a section view of the battery cover wall with a T-nut attached.

Figure 3D is an exploded view of the T-nut and the battery cover.

Figure 3E shows the location of the external attachment of a T-nut onto the wireless handset.

Figure 4A shows a wireless handset with the battery removed.

Figure 4B shows a T-nut and the back of the battery of the wireless handset.

Figure 4C is an exploded view of the back of the cradle and wireless handset, and the threaded bolt and T-nut.

Figure 4D is a perspective view of a secured wireless handset.

Figure 5A is a perspective view of another secured wireless handset.

Figure 5B is a perspective view showing the secured wireless handset with a security block.

Figure 5C is an enlarged view of the security block.

Figure 5D is an exploded view of the secured wireless handset of Figure 5B.

Figure 5E is an enlarged view of the latch, the lip, and the opening of the cradle.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following description includes the best mode of carrying out the invention. The detailed description is made for the purpose of illustrating the general principles of the invention and should not be taken in a limiting sense. The scope of the invention is determined by reference to the claims.

I assign each part, even if structurally identical to another part, a unique reference number wherever that part is shown in the drawing figures. A dashed circle indicates a portion of a figure that is enlarged in another figure. The figure showing the enlarged portion is indicated by a reference number tied to the dashed circle.

Figure 1 illustrates a secured wireless handset 10 including a wireless handset 20 in a cradle 30 secured to a communication site such as a vehicle dashboard 14 through cradle installation hardware 12. The cradle 30 can be electrically connected to a DC outlet to provide power to the wireless handset 20 and/or charge up the battery of the wireless handset 20. The wireless handset 20 is securely attached to the cradle 30 with a first attachment as will be described to discourage unauthorized removal of the wireless handset 20 and to ensure the wireless handset 20 will not fall out of the cradle 30. The first attachment encompasses a variety of structures that will secure the wireless handset to the cradle. This does not mean it cannot be broken, but that lawful persons would be deterred from further effort. The secured wireless handset 10 also encourages hands free communication through a speakerphone or a headset (not shown) attached to the wireless handset 20 or cradle 30.

Figure 2A is a perspective view of a secured wireless handset 10 formed by the wireless handset 20 attached to the cradle 30.

Figure 2B is a perspective view of the back of the cradle 30 with a threaded bolt 38 through a cradle mount 31 on the back of the cradle 30 and secured to the wireless handset 20.

Figure 2C is an exploded view of the secured wireless handset 10. The cradle 30 includes electrical contacts 34 and a power cord 36, and is attached to the wireless handset 20 by the threaded bolt 38 into a cradle hole 32.

Figure 2D is an exploded view of the back of the secured wireless handset 10. In the first attachment, the threaded bolt 38 is inserted through the first through hole 39 of the cradle mount 31 on the back of the cradle 30 into the internal threads 26 of the T-nut barrel 25 protruding from the second through hole 29 of the battery cover 22 to form a secured wireless handset 10. The first through hole 39 of cradle mount 31 defines the location and diameter of the cradle hole 32 shown in Figure 2C and the second through hole 29 in the battery cover 22 of the wireless handset 20.

Figure 3A is a perspective view of the back of the wireless handset 20 and the T-nut barrel 25 protruding through the second through hole 29 of the battery cover 22.

Figure 3B shows the battery cover 22 as removed from the wireless handset 20 to reveal the battery 44 and to show how the T-nut 24 is inserted through the internal surface 23 of the battery cover 22. This embodiment of the first attachment can be used if sufficient clearance exists between the internal surfaces 23 and 27 for the T-nut 24 and the battery 44. In another embodiment, the wireless handset 20 has no battery inside and the electrical contacts 34 shown in Figure 2C supply electrical power to the wireless handset 20.

Figure 3C is a section view of the battery cover 22 with the T-nut 24 where the T-nut barrel 25 with internal threads 26 is inserted through the second through hole 29 and secured to the internal surface 23 of the battery cover 22 with an adhesive material 28. The adhesive material 28 can be any suitable material such as a double sided adhesive tape, e.g., Duck Brand Permanent Mounting Tape or an adhesive such as the 3M™ High Strength 90 spray adhesive.

Figure 3D is an exploded view of the T-nut 24 before insertion in the battery cover 22. During assembly the T-nut barrel 25 with internal threads 26 is inserted through the second through hole 29 and secured onto the internal surface 23 by the adhesive material 28.

Figure 3E shows an alternative embodiment of the first attachment where the T-nut 24 will be attached to the external surface of the battery cover 22. This embodiment can be used if there is insufficient clearance for the T-nut 24 to be sandwiched between the internal surfaces 23 and 27 along with or without the battery 44 shown in Figure 3B. The T-nut 24 is attached to the external surface of the battery cover 22

through a suitable adhesive material 46 such as double-sided adhesive tape including a Duck Brand Permanent Mounting Tape or an adhesive such as the 3M™ High Strength 90 spray adhesive.

Figure 4A shows a battery 48 as removed from a wireless handset 40. The battery 48 is part of the battery cover and mounted on the back of the wireless handset 40. Figure 4B shows a T-nut 24 to be attached to the external surface of the battery 48 through an adhesive material 46 where internal attachment is not possible because it would require drilling a hole through the battery 48.

Figure 4C is an exploded view of the back of a secured wireless handset 50. In this embodiment of the first attachment, the threaded bolt 38 is threaded into the first through hole 39 of the cradle mount 31 on cradle 30 and mates with the internal threads 26 of the T-nut barrel 25. The T-nut 24 is externally attached on the battery 48 of the wireless handset 40. The wireless handset 20 shown in Figure 3E may be also used in a similar manner with the T-nut 24 attached to the external surface of the battery cover 22.

Figure 4D is a perspective view of a secured wireless handset 50 after the attachment of the wireless handset 40 as shown in Figure 4B or the wireless handset 20 as shown in Figure 3E to the cradle 30. The secured wireless handset 10 of Figure 2A and secured wireless handset 50 of Figure 4D can be applied to a variety of wireless handsets such as the Motorola V120 cell phone and other cell phones manufactured by Nokia, Siemens, and Samsung.

Figure 5A is a perspective view of another secured wireless handset 60 made with a wireless handset 64 such as the Motorola V60P mounted onto the cradle 62.

Figure 5B shows secured wireless handset 60 with wireless handset 64 secured in the cradle 62. In this embodiment of the first attachment, security block 66 in an opening 68 depresses a latch 69 with a lip 71 on the top 73 of wireless handset 64. The security block 66 prevents the latch 69 from moving upward and releasing the wireless handset 64. Thus, wireless handset 64 cannot be removed from cradle 62.

Figure 5C is an enlarged view of the security block 66, which is any object that fits in opening 68 but preferably is a substantially rectangular shaped rigid block of wood,

plastic, or metal. For the Motorola V60P, the security block 66 has one inch length, L, 0.48 inch width, W, and 1/8 inch height H. The security block 66 is shown with a beveled front so as to be flush with the front of the cradle 62.

Figure 5D is an exploded view of the secured wireless handset 60. In assembly, the latch 69, the release latch button 70, and the latch engage button 72 all function together through a known mechanism to engage and disengage the latch 69. When the latch release button 70 is depressed against the cradle 62, the latch 69 is raised upward in the opening 68 and stays in this unlocked disengaged position while the latch engage button 72 pushes outward. When the wireless handset 64 is mounted in the cradle 62, the back of the wireless handset 64 presses against the latch engage button 72 and the mechanism triggers the latch 69 to drop and engage the wireless handset 64 so that the lip 71 grips the wireless handset top 73 securely and the latch release button 70 again extends outward. To remove the wireless handset 64 from the cradle 62, the latch release button 70 is pressed against the cradle 62, the mechanism raises the latch 69 and the lip 71 disengages the top 73 of the wireless handset 64.

By inserting the security block 66 in the opening 68 after the wireless handset 64 is mounted onto the cradle 62, the upward movement of the latch 69 is prevented when the latch release button 70 is pressed. The security block 66 may be sized to a tight fit in the latch opening 68 so it can only be removed with a tool such as tweezers to prevent easy removal. The wireless handset power and data port 74 can be electrically connected to the cradle power and data port 76 to receive DC power through a power cord 78 and allow hands free communication. The secured wireless handset 60 is secured to the vehicle dashboard.

Figure 5E is an enlarged view showing the latch 69 with the lip 71 that moves up and down in the opening 68 to disengage and engage the top 73 of the wireless handset 64. The secured wireless handsets 10, 50 and 60 are illustrative only and can be easily installed with many known cradle vehicle installation hardware or to other communication sites inside vehicles, boats, enclosures where wireless handsets should be secured.